AN2406
Application note

TS4962IQ class D audio amplifier Evaluation board user guidelines

Features

- TS4962IQ low voltage class D differential audio power amplifier with standby mode
- Operating range from Vcc=2.4V to 5.5V
- 2.2W output power @ Vcc=5V, THD=1%, F=1kHz, with 4Ω load
- 1.4W output power @ Vcc=5V, THD=1%, F=1kHz, with 8Ω load
- Ultra low power consumption in standby mode (10nA)
- 63dB PSRR @ 217Hz in grounded mode (Av=2V/V)
- Low pop & click
- Fast startup time: 5ms
- Module gain set at 2V/V

Description

This mono class D demoboard is designed for the TS4962IQ class D audio amplifier. The TS4962IQ device, in a DFN package, is mounted on a two-layer PCB with two power planes acting as a heatsink.

Figure 1. shows the schematic diagram of the demoboard.

Figure 1. Schematic diagram of the mono class D demoboard

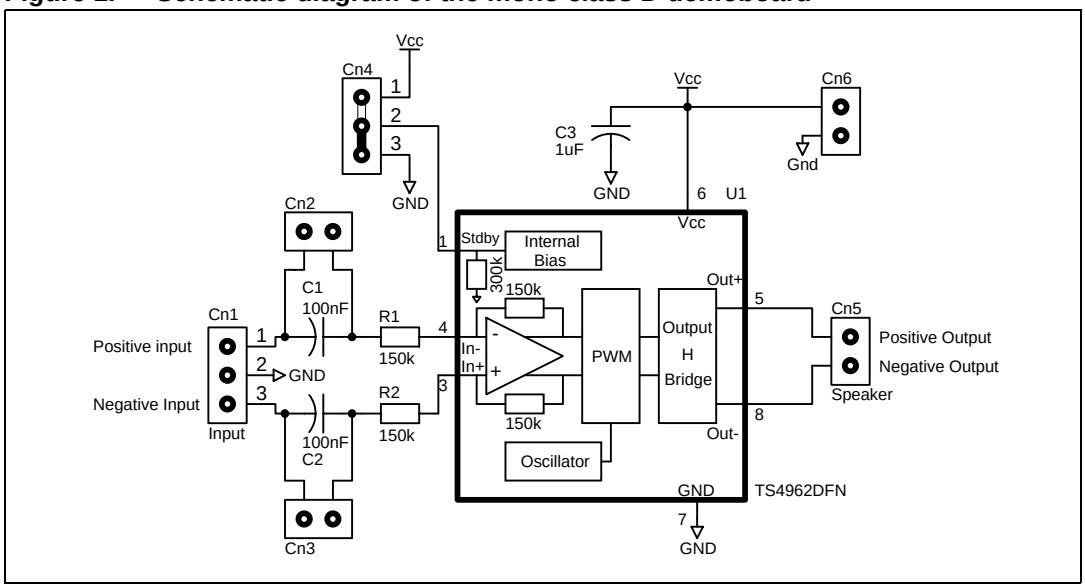
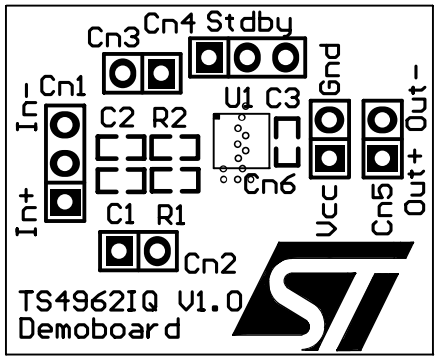


Figure 2. shows the top view of the demoboard PCB, with the markings showing the connector placements.

Figure 2. Mono class D demoboard - top view



Caution: When you apply the power supply through Cn6, DO NOT invert the polarity because it would destroy the amplifier U1.

Table 1 lists the connectors on the demoboard, with a description for each, and their configurations.

Table 1. Description of demoboard connectors and their configurations

Connectors	Description
Cn1	Input signal connector (active input signal positive and negative)
Cn2 and Cn3	Connectors to modify input configuration (from capacitor-coupled = no jumper to common mode feedback = short-circuit).
Cn5	Output signal connector (Vo+ and Vo-)
Cn4	Standby control connector (GND, Standby, V_{CC})
Cn6	Power connector (V_{CC} and GND). Power supply voltage from 2.4V to 5.5V.
U1	Class D amplifier TS4962IQ

A list of the components mounted on the demoboard is given in *Table 2*.

Table 2. Component list for the mono class D demoboard

Designation	Quantity	Description
C1	1	100nF/10V X7R/0603 capacitor
C2	1	100nF/10V X7R/0603 capacitor
C3	1	1µF/10V, X5R/0603 capacitor
Cn1	1	3 pins header 2.54mm pitch
Cn2	1	2 pins header 2.54mm pitch
Cn3	1	2 pins header 2.54mm pitch
Cn4	1	3 pins header 2.54mm pitch
Cn5	1	2 pins header 2.54mm pitch
Cn6	1	2 pins header 2.54mm pitch
R1	1	150k, 1/16W/0603 1% resistor
R2	1	150k, 1/16W/0603 1% resistor
U1	1	TS4962IQ

Figure 3 and *Figure 4* show the demoboard PCB layers.

Figure 3. PCB bottom layer

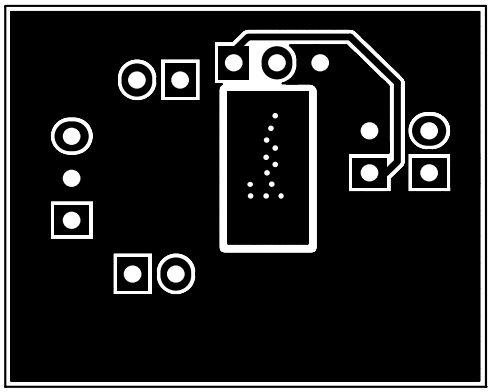
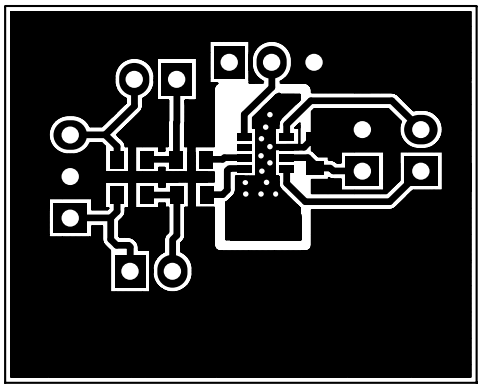


Figure 4. PCB top layer



Configuring the demoboard characteristics

Differential gain

The demoboard is set up with the differential gain A_V set to 2V/V.

If necessary, the differential gain can be adapted by modifying the values of resistors R1 and R2, in accordance with the following relation:

$$A_v = \frac{300k\Omega}{R1} \text{ or } A_v = \frac{300k\Omega}{R2}$$

where R1=R2 in kΩ

Input configuration

On the demoboard, the Cn2 and Cn3 jumpers allow you to change the input configuration between **capacitor-coupled** and **common-mode feedback**.

In the **capacitor-coupled configuration**, the -3dB cut-off frequency in Hz is:

$$\frac{1}{2\pi \times R_1 \times C_1} = \frac{1}{2\pi \times R_2 \times C_2}$$

with R in Ohms, C in Farads and C1=C2.

More information about component calculations is available in the TS4962 datasheet.

Revision history

Date	Revision	Changes
28-Jul-2006	1	Initial release.
12-Apr-2007	2	Updated *Table 2: Component list for the mono class D demoboard*.

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